APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,621	02/20/2004	Anoop Mukker	42P18614	7209

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EXAMINER
MCFADDEN, MICHAEL B

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/783,621	MUKKER ET AL.
	Examiner	Art Unit	
	Michael B. McFadden	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>05 July 2006</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-40</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-40</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>20 February 2004</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1.   Claims 1-40 are pending in the Application.

Response to Amendment

2.   Applicant's arguments filed on 05 July 2006 have been fully considered but they

are not persuasive.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Cai et

al. (US Patent No. 6,349,363 (herein after Cai)).

5.   **Regarding Claims 1, 7, 13, 19, and 25,** Cai discloses partitioning a cache array

into one or more special-purpose entries and one or more general-purpose entries **(Cai:**

Column 2, Lines 57-60), wherein special-purpose entries are only allocated for one or

more streams having a particular stream ID, <u>wherein the stream ID is stored outside the</u>

<u>cache array.</u> **(Cai: Column 3, Lines 43-49 and Column 4, Lines 25-42).**

6.   **Regarding Claims 2, 8, 14, 20, and 30,** Cai discloses allocating the one or more

special purpose entries based on the particular stream ID and a particular input

address. **(Cai: Column 3, Lines 43-49 and Column 4, Lines 25-42 and Figure 3,**

Element 162). The EID coupled with input address locate where the entries, in the

cache, will be placed. A cache input address is inherent in accessing stored data

because that is how data is located in a cache.

7.   **Regarding Claims 3, 9, 15, and 21,** Cai discloses storing data from the one or

more streams in the one or more special-purpose entries when the particular stream ID

and the particular input address match a predetermined stream ID and a predetermined

input address; and storing data from the one or more streams in the one or more

general-purpose entries when the particular stream ID and the particular input address

do not match the predetermined stream ID and the predetermined input address. **(Cai:**

Column 3, Lines 43-49 and Column 4, Lines 25-42 and Figure 3, Element 162). The

EID coupled with input address locate where the entries, in the cache, will be

placed. A cache input address is inherent in accessing stored data because that

is how data is located in a cache. The general-purpose entries would be stored in

the default cache with the "default EID identifier".

8.   **Regarding Claims 4, 10, 16, 22, 28, 29, 31, and 32,** Cai discloses determining

when the particular stream ID and the particular input address match the predetermined

stream ID and the predetermined input address using special-purpose control logic; and

using a cache replacement algorithm implemented using general-purpose control logic

for the one or more general-purpose entries. **(Cai: Column 3, Lines 1-13 and Column**

4, Lines 9-25 and Column 5, Line 62 – Column 6, Line 7). The memory controller

manages multiple cache partitions and is able to differentiate multiple EIDs.

Being able to differentiate between more than two EIDs shows that special logic

is used to determine the cache location from the address and EID.

9.   **Regarding Claims 5, 17, and 23,** Cai discloses determining if a cross-access

scenario exists. **(Cai: Column 6, Lines 17-19) Snooping allows the caches to know**

if they contain the same information as another cache in the same system.

10.   **Regarding Claims 6, 12, 18, 24, 26, 34,** Cai discloses wherein the special-

purpose stream includes a data stream and wherein the system contains an I/0 hub

interface connected to a bus, a processor interface; and a host AGP controller

connected to the system memory controller via the bus; wherein the cache array

receives the cache operation requesting data via the one or more interfaces, and

returns a cache hit in response to the cache operation, wherein the cache has a

pending fetch for the data in response to a prior cache operation requesting the data.

(Cai: Column 6, Line 60 – Column 7, Line 5)

11.   **Regarding Claim 11 and 33,** Cai discloses a DRAM controller integrated with

the cache memory array. **(Cai: Column 5, Lines 12-16) A DRAM is controlled by a**

DRAM controller.

12.   **Regarding Claim 27,** Cai discloses wherein the processor interface connects a

plurality of processors **(Figure 2 and Column 6, Line 44 – Column 7, Line 14),** the

plurality of processors including a 16-bit processor and a 64-bit processor. **From Figure 2 it can be seen that the caches are connected to a memory hub. Also connected to the hub are many devices. The text also discloses the caches connected to the multiple devices and controllers. The various devices and controllers inherently have their own processors. Therefore disclosing a plurality of processors. The size of the processors is a design choice and therefore does not carry patentable weight.**

13.   **Claims 35-40 are rejected using the same rationale as claim 5. Furthermore, by being able to snoop, the system must contain logic which allows the snoop to be performed.**

Response to Arguments

14.   Applicant's arguments filed 05 July 2006 have been fully considered but they are not persuasive.

15.   **Regarding Claims 1, 7, 13, 19, 25, and 30,** Applicant contends that Cai does not teach the presently claimed invention where the stream ID is stored outside the cache array. **However, as pointed out by the Applicant the EID is stored in element 118 of Figure 1. The register (Figure 1, element 118) where the EIDs are stored is inside the control logic, or memory controller (Figure 1, element 108). There are multiple cache arrays connected to the control logic that the EIDs reference.**

Therefore Cai does teach the presently claimed invention where the stream ID is stored outside the cache array.

16.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

17.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. McFadden whose telephone number is (571)272-8013. The examiner can normally be reached on Monday-Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manorama Padmanabhan can be reached on (571)272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

MBM
09/18/2006

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER